**Science Lab Precautions**



Science laboratories exist for almost any occupation. This is especially true for chemical, physics and biological research. However, other scientific laboratories serve for quality control purposes, such as food processing, metallurgy (study of metals) or the manufacture of pharmaceuticals. There are even laboratories in sewer plants to maintain public safety and health. Each variety of laboratories presents an assortment of hazards. What science lab precautions should lab technicians take?

**Built-In Laboratory Hazards**

Most laboratories have built-in features that could **conceivably** be a source of danger, but not necessarily. Some laboratories provide steam access, nitrogen and natural gas for burners. There may be a vacuum or oxygen in the **presence** of ovens or kilns. Some laboratories provide radioactive materials. Others contain storage cabinets with flammable solvents, strong oxidizers and corrosive acids. Are there electrical devices for special purposes? Laboratory technicians are usually familiar with and understand such items, but overconfidence or a lack of proper training calls for caution. Clothing and other protective devices need to be correctly fitted and utilized to maintain worker safety.

**Hazards Seen**

Equipment may be very visible, yet pose dangers if full attention is not maintained during use or if effective safeguards are not in place. A person may lose a finger or worse from a three-roll mill. Another may have a hand crushed by a concrete cylinder test apparatus. Yet a third may be badly burned in a metallurgical lab, or a metal spark may pierce the eye. Safety training is a must. Goggles need to be worn. When appropriate, a stick rather than fingers should be used to guide objects through potentially dangerous processes.

**Hazards Unseen**

There may be unseen dangers during laboratory testing. Biological laboratories and sewer plant laboratory testing can expose the technician to infectious bacteria. Radioactive sources can leak radiation. Some chemical reactions release dangerous but odorless gases such as carbon monoxide. Poor wiring causes risks from electrical hazards to be very real. Detectors need to be installed and maintained; respirators and protective clothing need to be worn. Escape routes must be accessible**,** so people can get out if necessary.

**Hazards Unforeseen**

Some dangerous situations can happen unexpectedly. As an example, some solvents are heavier than air. If used in quantity in the open, the fumes can travel along floors, down stairwells, and be ignited from another location leading to a dangerous fire and explosion. Some substances such as ether can form explosive peroxides in a fairly short period of time. Accidental mixing of two substances, such as cyanides with acids, can produce fumes capable of killing before one can receive medical help. It is essential to use a laboratory hood where such risks exist. If a reaction must be carried out despite a small risk of explosion, special shields should be set in place. Fire extinguishers of suitable class should be readily accessible.



**Additional Safety Precautions**



Other accidents may take place. Chemicals may be spilled or splashed in the eyes. Fires may break out. Chemical cabinets may fall. Thus it is important to have spill kits available and eyewash stations situated in places readily found by a worker or visitor unable to see at the time of use. Oxidizing chemicals should not be stored near solvents, or acids near alkalis. Hair length should be considered. Antistatic clothing may be required if static electricity is problematic. Materials safety data sheets (MSDS) should be available near the location of materials' use. Safety agency phone numbers should be close at hand. Sobriety is essential.

Passage text Copyright © 1999-2011 Demand Media, Inc. Retreived from http://www.ehow.com/info\_8186219\_science-lab-precautions.html#ixzz1Rv3A2Err

(2011) Created by The Meadows Center for Preventing Educational Risk for use in Institute of Education Sciences, grant #26-1802-23, 2010-2014). Lexile 970, Word Count 572